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(56) Documents Cited

EP 1033207 A2

DE 029608200 U1

DE 004240336 A1

DE 004119325 A1

US 5709596 A

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(58) Field of Search

INT CL<sup>7</sup> B24B, B25F

Other: Online: PAJ, WPI

(54) Abstract Title

**Palm sander with strap**

(57) An orbital palm sander comprises a substantially ellipsiod palm receiving surface 13 and a strap 25 which extends over this surface 13 and is rotatably attached to the sander at two attachment points 7a and 7b. The attachment points 7a and 7b are respectively adjacent the user's thumb and little finger when the sander is grasped for use. Also when the sander is in use, the strap 25 extends across the width of the back of the user's hand. The strap 25 is adjustable in length either by being formed from a plurality of sections joined together (Fig. 1) or by being formed from a single strip fixedly attached to a first attachment point 7a which is looped through an opposite attachment point 7b and is folded back on itself. An on/off switch 19 is located on a minor axis of the ellipsiod. The sander also comprises vents 20 for drawing in air and a plugged aperture 27 for the attachment of a vacuum hose.

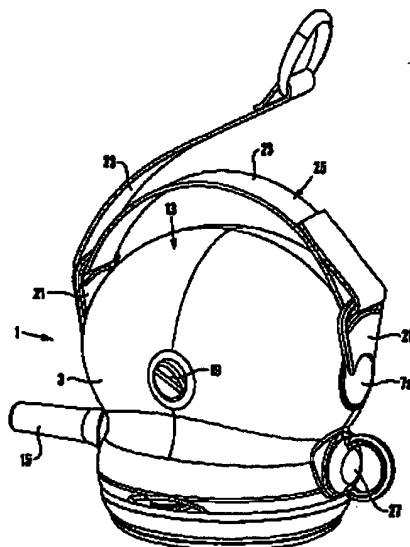


Fig.2

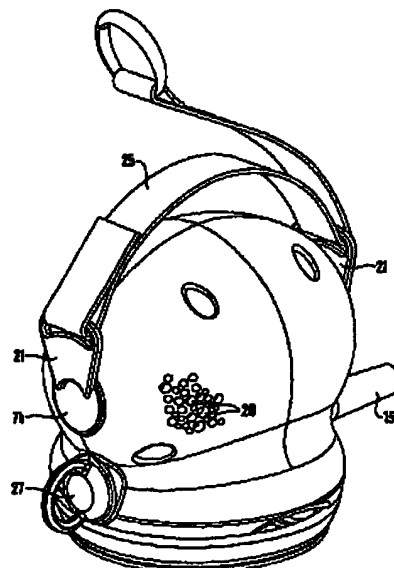


Fig.3

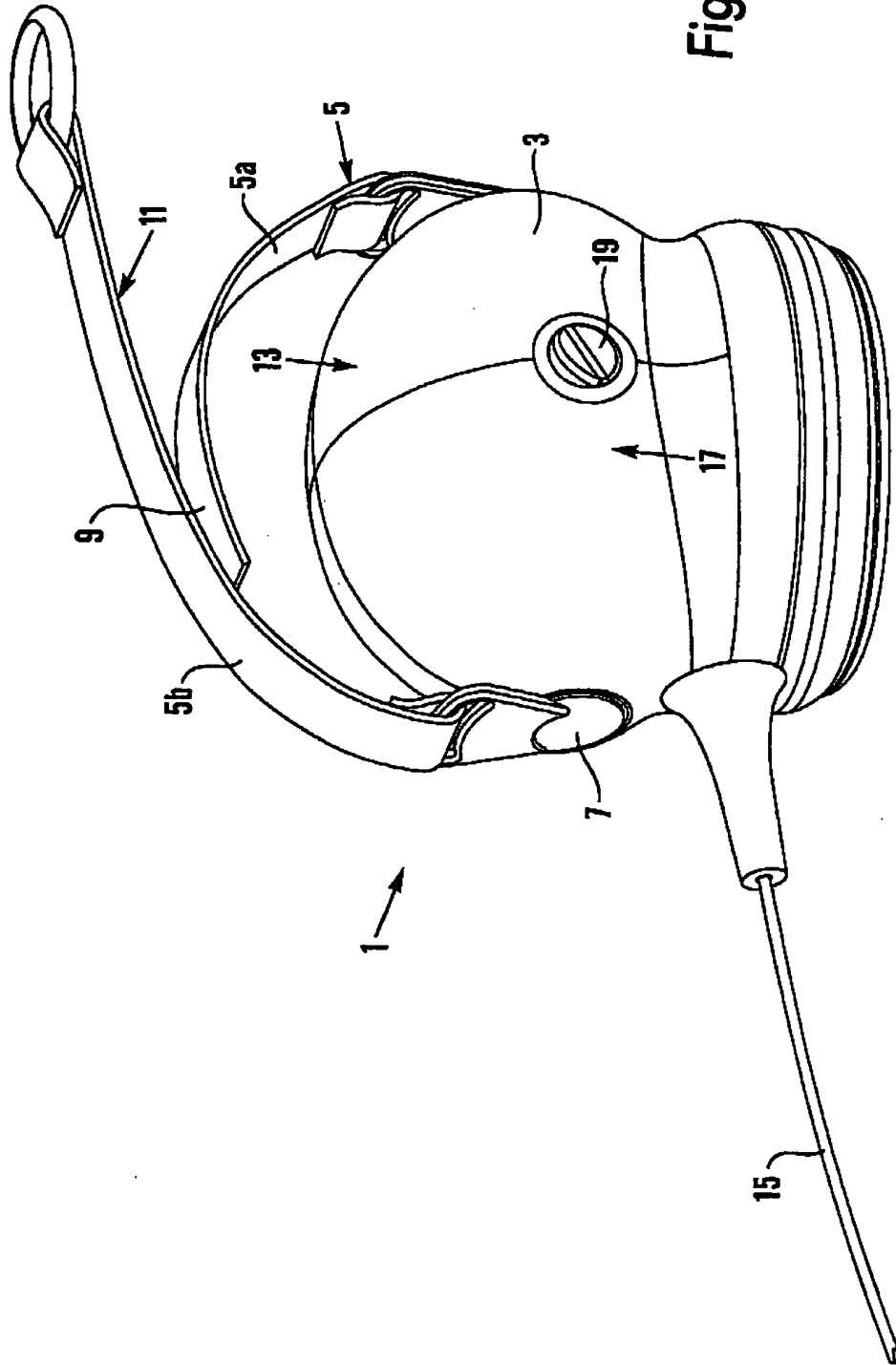
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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Fig. 1



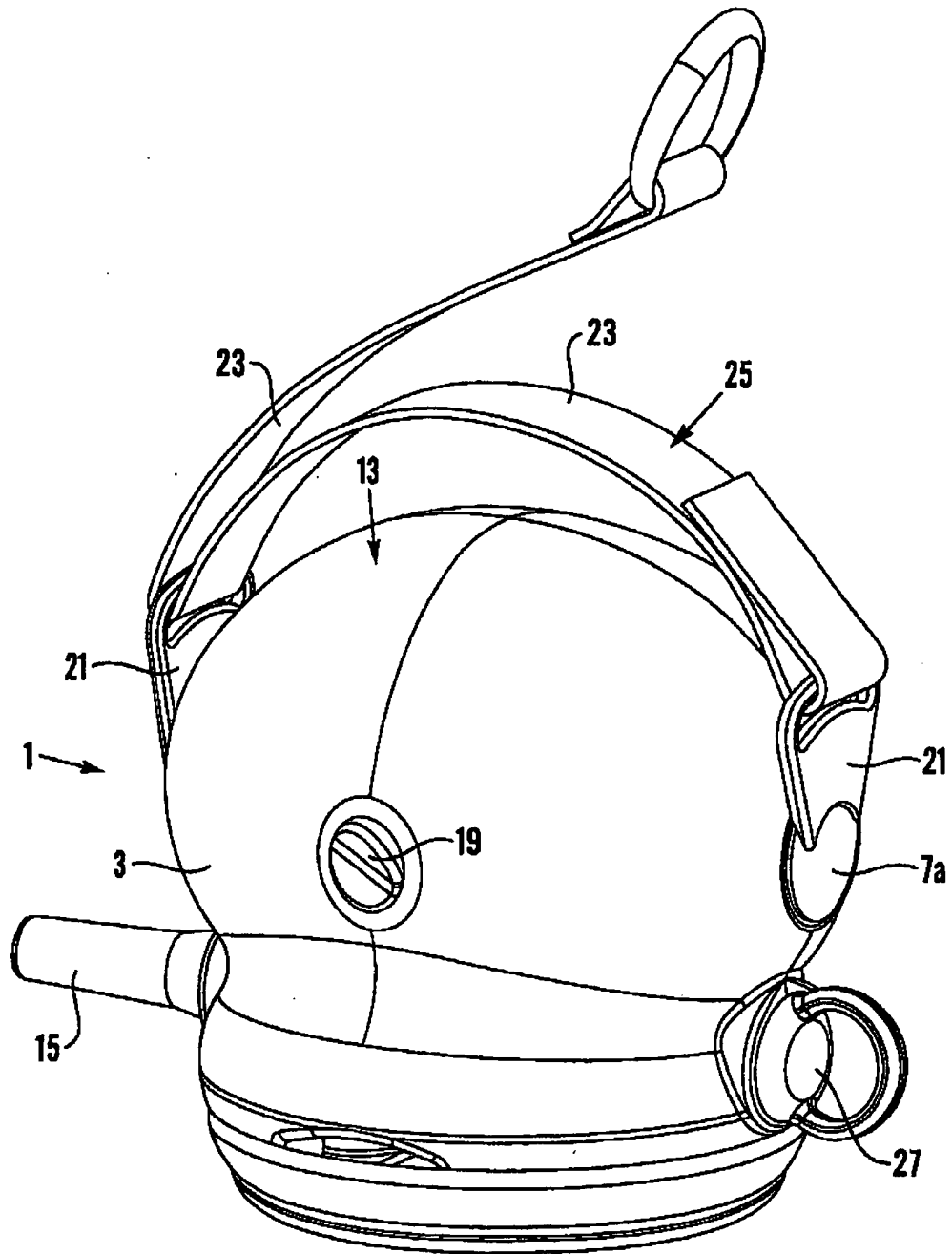


Fig.2

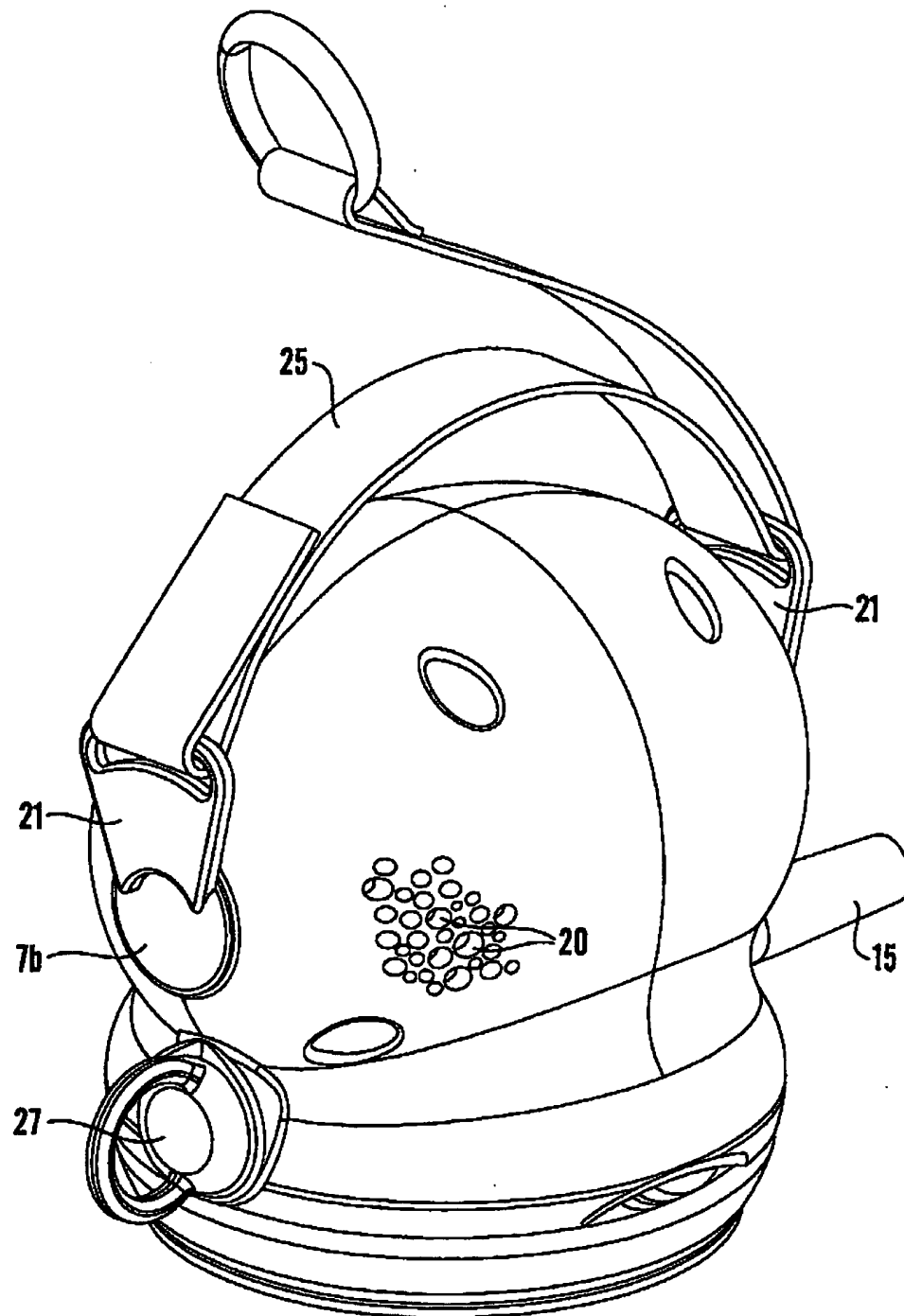


Fig.3

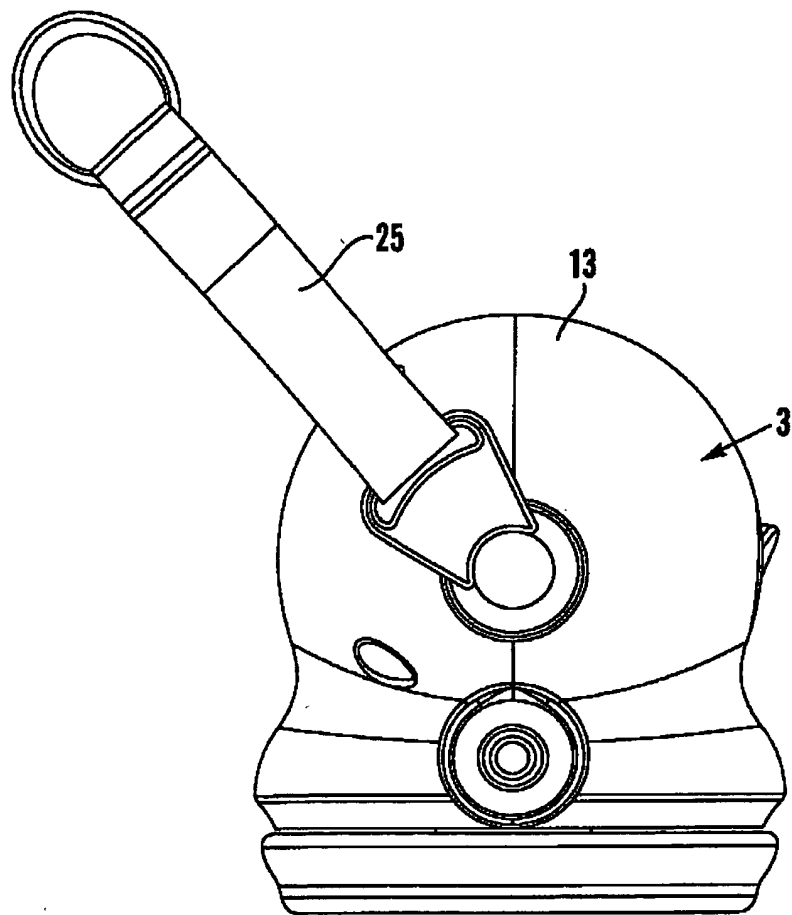


Fig.4

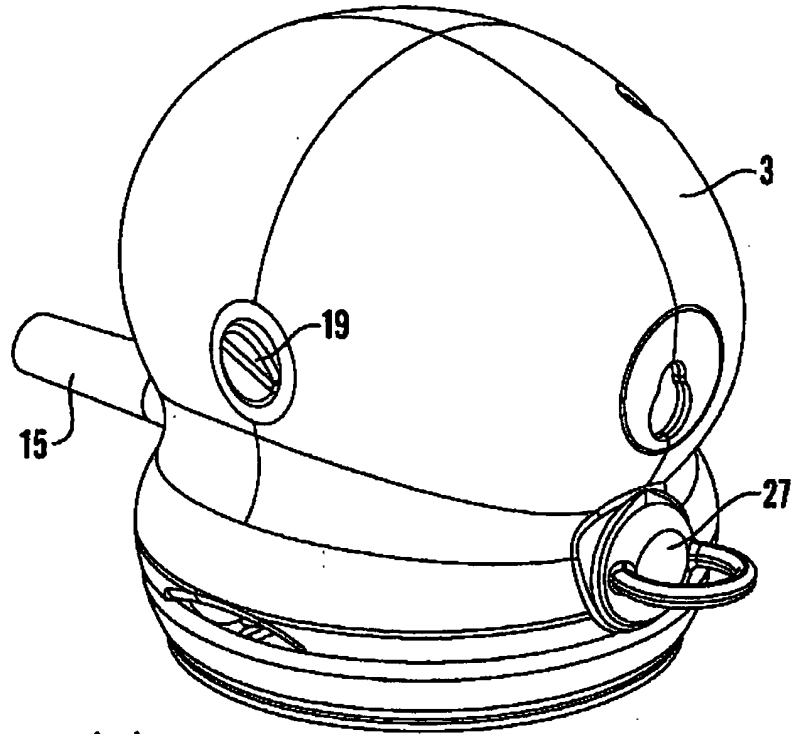


Fig. 5(a)

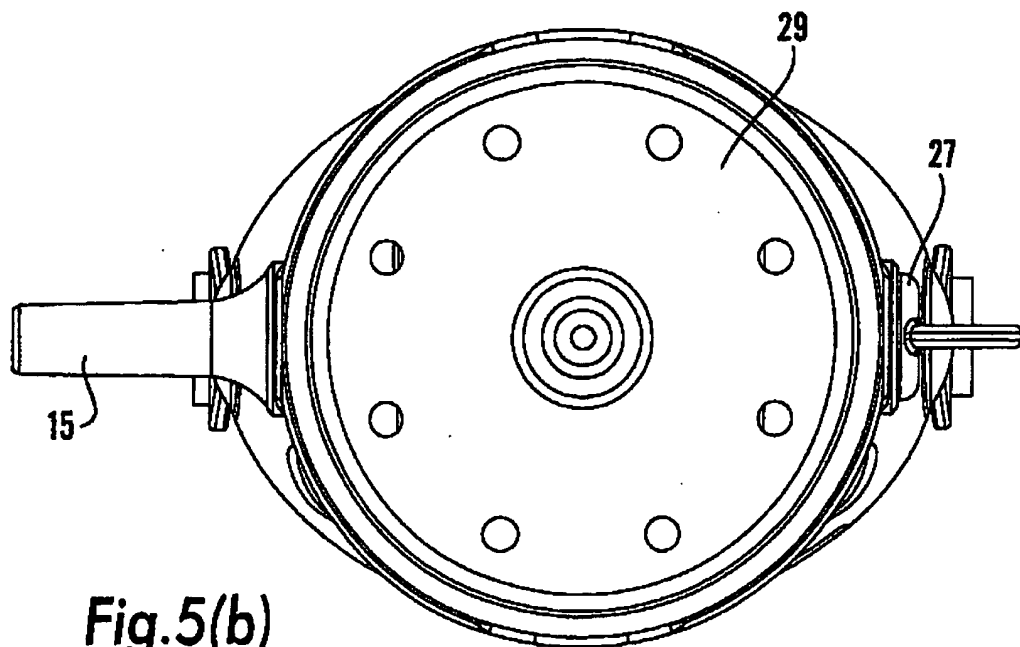


Fig. 5(b)

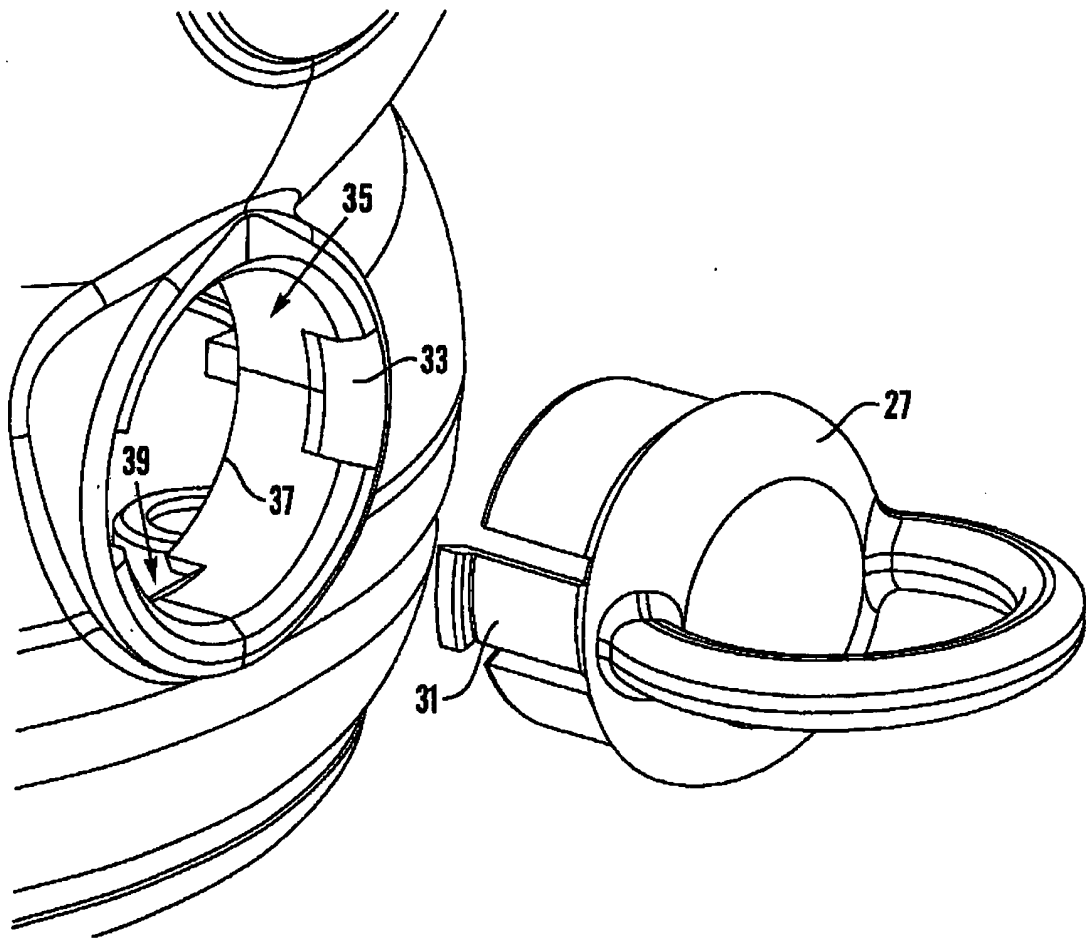


Fig.6

Sander

The present invention relates to a powered sander, for example for use by carpenters/builders/decorators or persons carrying out do-it-yourself home improvement.

According to a first aspect, the invention comprises a hand-held powered sander comprising: (a) a main body arranged to be held in the palm of the hand of a user; and (b) a strap attached, at least in use, to the main body at at least one attachment point and arranged to extend across at least part of the width of the back of the user's hand.

Preferably the strap has a length sufficient to extend across the entirety of the width of the back of the user's hand.

More preferably, the strap is attached, at least in use, to the main body of the sander at at least two spaced-apart attachment points, preferably so that the hand is encircled by the strap extending across the back of the hand and the main body part held in the palm of the hand. Preferably, in use, one of the attachment points is situated adjacent to one edge of the hand (e.g. adjacent to the thumb) and the other attachment point is situated adjacent to the other edge of the hand (e.g. adjacent to the little finger).

Preferably the strap is flexible. Preferred materials for the material of the strap include polymeric materials (including rubber, for example); woven fabrics (including webbing, for example); and the like. In alternative embodiments of the invention, the strap may be substantially rigid, for example formed from a substantially rigid polymer material and/or metal and/or wood.

Advantageously, the strap may be adjustable in length. This has the advantage of enabling the strap to be tightened (to the desired degree) around the back of the hand. It may also facilitate insertion of the hand under the strap



and/or removal of the hand from under the strap, for example. The strap may consequently be formed from two (or more) sections joined or joinable together. A particularly preferred manner of making the strap adjustable in length is by incorporating loop-and-hook joining strips (e.g. VELCRO – trade mark) on opposing surfaces of two or more sections of the strap. Additionally or alternatively the strap may include an adjustable buckle or the like.

Preferably, in use, the strap forms a tight fit (preferably of the desired tightness according to the user's comfort) across the back of the user's hand. Advantageously the tightness or looseness of the strap may be determined by means of the length of the strap being adjusted by the user.

In preferred embodiments of the invention the strap is rotatably attached to the main body of the sander. For example, in embodiments of the invention in which the strap is attached to the main body at two spaced apart attachment points, the strap may be rotatably attached to the main body about an axis extending through both attachment points. This has the advantage of enabling the user to position the strap in a comfortable position across the back of the hand. It may also facilitate insertion of the user's hand under the strap and/or removal of the hand from under the strap. The rotatability of the strap with respect to the main body preferably enables the angle of the hand and/or arm of the user with respect to the main body to be varied during use, thereby enabling the sander to be used at a variety of angles (for example in order to sand awkward to reach surfaces).

The main body of the sander preferably comprises a palm-receiving surface across which the strap extends. The palm-receiving surface is preferably convex in shape or otherwise contoured to fit comfortably and conveniently in the palm of a user's hand.

The strap preferably enables the user to hold and use the sander in comfort and safety for prolonged periods. In particular, the strap preferably









As previously mentioned, Figure 5(a) shows the sander with the strap and attachment points removed.

Figure 5(b) shows the underside of the sander – the movable mount 29 to which the abrasive element may be attached, is shown.

Figure 6 shows a detail of the removable plug 27 referred to above. The plug includes a pair of resiliently flexible detents 31 which are arranged to be received by recesses 33 in the aperture 35. The recesses 33 enable the plug to be pushed (substantially without rotation) fully into the aperture so that the detents 31 of the plug engage on a rim 37 at the interior of the aperture. The plug is thereby prevented from being removed from the aperture until it is rotated through 90° and the plug detents 31 engage with recesses 39 in the rear rim 37 of the aperture, which enable the plug to be withdrawn from the aperture (substantially without further rotation).







17. A sander according to Claim 15 or Claim 16, in which the main body includes a motor which drives the movement of the abrasive means with respect to the main body, in use.
18. A sander according to any one of claims 15 to 17, in which the sander is an orbital sander, and the movement of the abrasive means with respect to the main body is an orbital movement.
19. A sander according to any preceding claim, in which the main body further comprises air vents via which air may be drawn into the main body, in use.
20. A sander according to any preceding claim, in which the main body includes an aperture for the attachment of a vacuum hose.
21. A sander according to Claim 20, in which the aperture contains a removable plug, the plug including a pair of resiliently flexible detents which are arranged to be received in recesses in the aperture.
22. A sander according to Claim 21, in which the recesses enable the plug to be pushed substantially without rotation fully into the aperture so that the detents of the plug engage on a rim at the interior of the aperture.
23. A sander according to Claim 22, in which the plug is prevented from being removed from the aperture until it is rotated and the plug detents engage with further recesses, in the rear rim of the aperture, which enable the plug to be withdrawn from the aperture substantially without further rotation.
24. A sander substantially as hereinbefore described with reference to the accompanying drawings.

25. A sander substantially as shown in the accompanying drawings.



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Application No: GB 0124206.4  
Claims searched: 1-25

Examiner: Matthew Lawson  
Date of search: 29 January 2003

## Patents Act 1977 : Search Report under Section 17

### Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance	
X	1-13,19	US 1871674	(ELLITHORPE) - the whole specification, especially figures 1-3.
X	1-5,9,11,12,15-17	DE 4119325 A1	(LICENTIA) - WPI Abstract Accession No. 92-425026/52 and the figures.
X	1-3,5-12,19	EP 1033207 A2	(C & E) - WPI Abstract Accession No. 00-566809/53 and figures 1 & 2.
X	1 at least	DE 4240336 A1	(RAINER) - WPI Abstract Accession No. 94-192386/24 and the figures.
X	1 at least	DE 29608200 U1	(STENDERS) - WPI Abstract Accession No. 96-385650/39 and the figure.
A		US 5709596	(ALEXANDER) - the figures.

### Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

### Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC<sup>v</sup>:

Worldwide search of patent documents classified in the following areas of the IPC<sup>v</sup>:

B24B; B25F

The following online and other databases have been used in the preparation of this search report:

Online: PAJ, WPI